Harris County
Public Health
Building a Healthy Community

Harris County Leading Causes of Death Analysis 2015-2019

with Preliminary Exploration of 2020

Compiled by
Office of Science, Surveillance, and Technology
Office of Planning and Innovation
Harris County Public Health
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Executive Summary

Harris County Public Health (HCPH) has analyzed mortality (death) data from 2015-2019. The report evaluates life expectancy, mortality rates, and leading causes of death in Harris County for the years 2015 to 2019, right before the COVID-19 pandemic. Leading causes of death was also evaluated for 2020 to include the impacts of the pandemic on death trends.

Data findings are summarized below. Life expectancy is the average number of years a person in a defined community can expect to live based on current mortality rates. Life expectancy is heavily influenced by social determinants of health. Mortality rates, also defined as death rates, are used to explain trends in overall death counts while accounting for population size and age.

Data Summary

Data	2015-2019 Findings	Comparison	Disparities
Average Life Expectancy at Birth	Harris County • 78.9 years Texas • 78.5 years United States • 78.7 years	• Harris County life expectancy are similar to state & national averages • Due to COVID-19, life expectancy across the nation is expected to decrease by 1.5 years in 2020	*Geography* • Life expectancy varies geographically across Harris County *Gender* • Women have higher life expectancy than men *Race/Ethnicity* • African American/Black men have the lowest life expectancy at 72.3 years
Leading Causes of Death (2015-2019)	1. Heart Disease 2. Cancer 3. Accidents 4. Cerebrovascular Disease 5. Chronic Lower Respiratory Disease 6. Alzheimer's Disease 7. Diabetes 8. Septicemia 9. Kidney Disease 10. Suicide 11. Chronic Liver Disease & Cirrhosis	• The top 4 leading causes of death in Harris County have not changed since 2015 • Alzheimer's deaths have stabilized since their increase from 2013-2015 • COVID-19 was the 3rd leading cause of death in 2020, with 3626 deaths	*Race/Ethnicity* • Homicide is the 8th leading cause of death for African American/Black, which is not included in the top 11 causes of death for the overall population • Suicide is the 8th leading cause of death for Whites
Age-Adjusted All-Cause Mortality Rate per 100,000 people	Harris County • 695.0 Texas • 731.9 United States • 726.3	• Overall, age-adjusted mortality rates have steadily decreased since 2015; however, several disease mortalities have increased • Harris County's mortality rates for septicemia, kidney disease, & homicide are significantly higher than the rates for Texas & the U.S.	*Gender* • Men have a higher mortality rate than women *Race/Ethnicity* • African American/Black have a significantly higher mortality rate than any other racial group at 936.1

Demographics and Social Characteristics

Harris County, home of the fourth largest city in the US, is the most populous county in Texas and the third most populous county in the U.S. With a population of more than 4.7 million in 2021, it is also one of the fastest growing counties in Texas and in the nation. Ethnically diverse immigration drives the growth of Harris County and nearby territories, with 26.1% of residents being foreign-born and 44.4% of residents speaking languages other than English.

In 2019, racial/ethnic makeup is approximately 43.7% Hispanic, 28.5% White, 18.5% African American/Black, and 7.0% Asian/Pacific Islanders**.** Approximately 10.3% of the population is 65 years or older, and 29.0% is 20 years and under. Whites are the majority among those over 65 years old. During 2014-2018, the median age of county residents was 33.3 years, which was younger than the entire U.S population, with a median age of 37.9 years.

Race/Ethnicity Distribution, Harris County 2019

Race/Ethnicity	Population Size	Percent
Hispanic	2,061,019	43.7
Asian/Pacific Islander	331,550	7.0
African American/Black	874,005	18.5
White	1,345,137	28.5
American Indian/Alaska Native	8,802	0.2
Multi-racial	79,439	1.7
Other	13,373	0.3

Source: US Census 2019 ACS 1-Year Survey. Approved for public distribution. 2021-07-28

Gender Distribution, Harris County 2019

Sex	Population Size	Percent
Male	2,339,629	49.6
Female	2,373,696	50.4

Source: US Census 2019 ACS 1-Year Survey. Approved for public distribution. 2021-07-28

Age Distribution, Harris County 2019

Age	Population Size	Percent
0-19 Years old	1,367,345	29.0
20-64 years old	2,832,064	60.1
65 years or older	513,916	10.9

Source: US Census 2019 ACS 1-Year Survey. Approved for public distribution. 2021-07-28

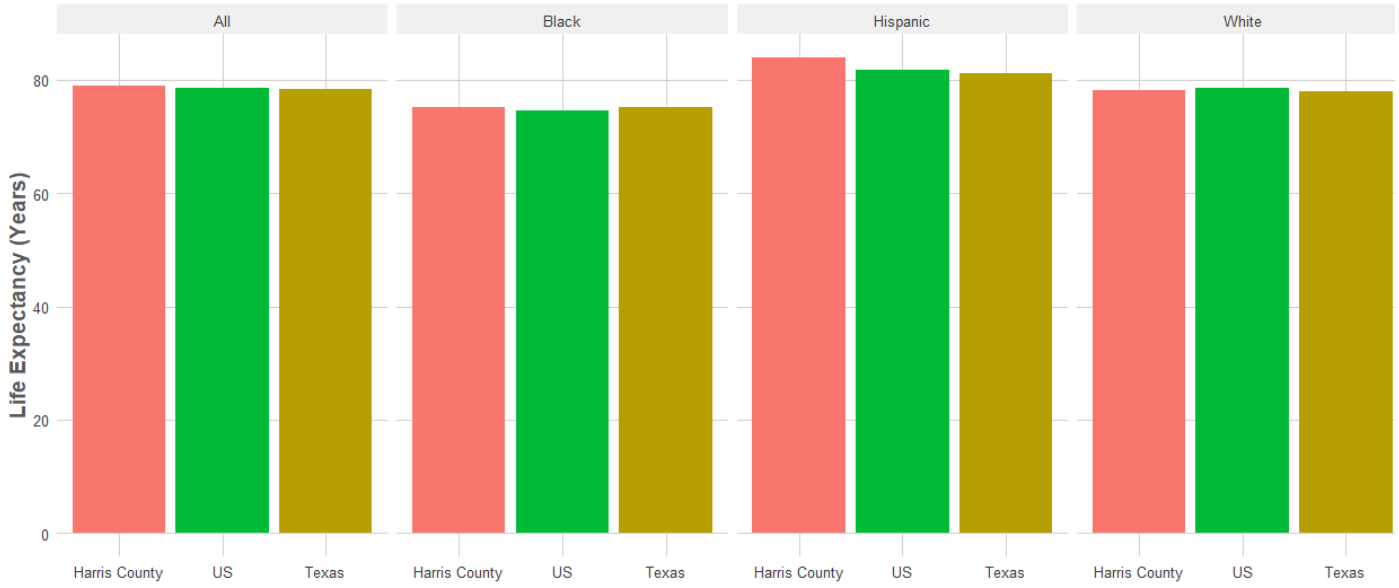
Average Life Expectancy

Life expectancy is the average number of years a person in a defined community can expect to live based on current mortality rates. Life expectancy is heavily influenced by social determinants of health.

Life expectancy at birth for the Harris County population in 2018 was 78.9 years, similar to 78.5 years for the state of Texas and 78.7 years for the entire U.S. population. In 2020, life expectancy across the nation is expected to decrease by 1.5 years due to COVID-19.

Average life expectancies differ between location within Harris County and by race and ethnicity. The figure below shows life expectancy overall and by race in 2018. African American/Blacks in Harris County had lower life expectancy at 75.3 years than Whites at 78.2 years and Hispanics at 83.9 years. African American/Black males in Harris County have the lowest life expectancy at 72.3 years.

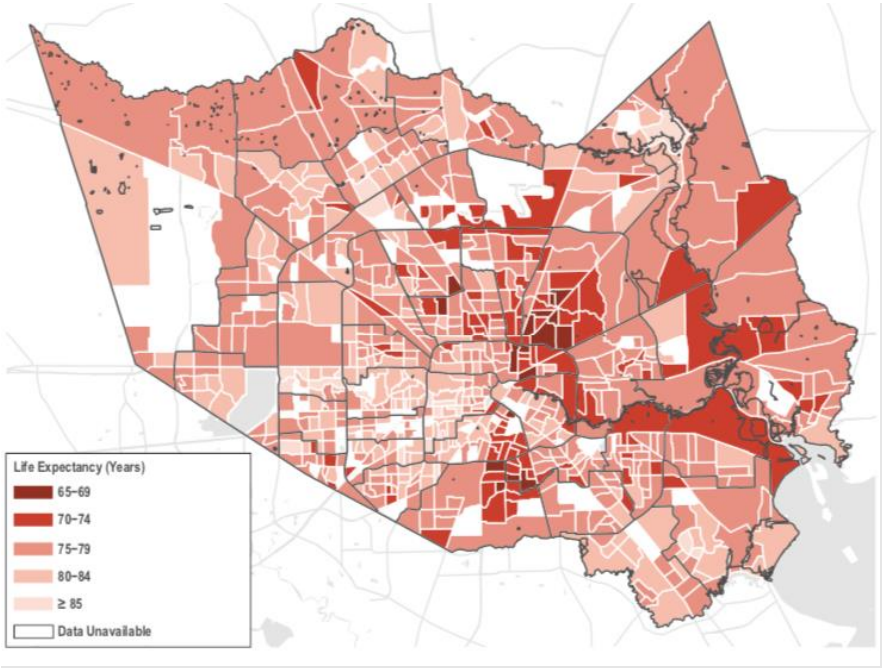
Life Expectancy at Birth Overall and by Race/Ethnicity in Harris County, Texas, and United States 2018



Source: County Health Rankings & Roadmaps. For Public Distribution. Updated: 2021-08-(

Detailed life expectancy data at the subcounty level for 2015-2019 is not available. However, life expectancy differs by Harris County census tracts by up to 23.5 years. Where a person lives correlates to their life expectancy due to social, economic, and environmental factors.

Life Expectancy by Census Tract, Harris County 2010-2015



Source: Harris Cares 2020

Mortality

Overall Mortality

There were 132,177 total deaths during 2015-2019 in Harris County. Data presented throughout this report will show crude mortality rates or age-adjusted mortality rates rather than total death counts to account for growing population sizes and age. Crude rates are simple rates (e.g., deaths/population). Age-adjusted rates show rates of death after controlling for the age distribution of a population. Age-adjusted rates are preferred because mortality rates are strongly influenced by the age distribution. An older population will naturally have a higher mortality rate than a younger population.

The table below shows the crude mortality rates and age-adjusted mortality rates for all causes of death in Harris County from 2015-2019. People 18 years and older account for 97.5% of all Harris County deaths during this period. The average age-adjusted mortality rate is 695.0 per 100,000 persons in these five years. The mortality rate in 2019 is statistically significantly lower than 2018.

Yearly Crude and Age-Adjusted All-Cause Mortality Rates, Harris County 2015-2019

Year	Total Deaths	Population	Crude Mortality Rate Per 100,000 Persons	Age-Adjusted Mortality Rate per 100,000 Persons(95% Confidence Interval)
2015	25,477	4,538,028	561.4	716.8(707.7-725.9)
2016	25,997	4,589,928	566.4	703.6(694.7-712.4)
2017	26,806	4,652,980	576.1	700.5(691.9-709.2)
2018	27,167	4,698,619	578.2	693.8(685.3-702.2)
2019	26,730	4,713,325	567.1	664.4(656.3-672.6)

Source: CDC Wonders. Age-adjusted to the 2000 standard population. Approved for public distribution. 2021-07-28

Overall Mortality by Gender

Reduced mortality rates were seen for both men and women from 2015-2019. Overall, male mortality is higher than female mortality for all five years (824.1 average age-adjusted rate per 100,000 for males, 586.8 for females).

Yearly Crude and Age-Adjusted All-Cause Mortality Rates by Gender, Harris County 2015-2019

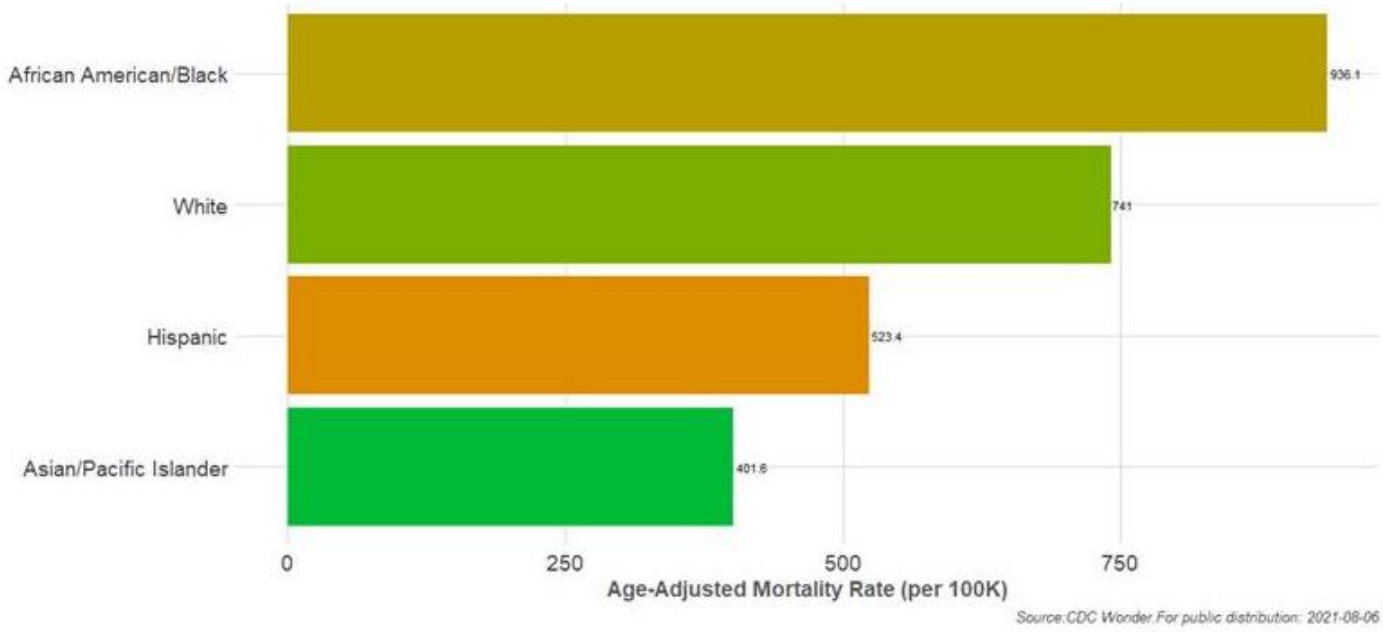
Year	Total Deaths	Population	Crude Mortality Rate Per 100,000 Persons	Age-Adjusted Mortality Rate per 100,000 Persons(95% Confidence Interval)
Male				
2015	13,440	2,257,424	595.4	846.2(830.9-861.6)
2016	13,989	2,281,871	613	846.9(831.9-861.9)
2017	14,166	2,313,530	612.3	823.2(808.8-837.6)
2018	14,462	2,333,866	619.7	822.7(808.5-836.9)
2019	14,282	2,339,443	610.5	787.2(773.6-800.8)
Female				
2015	12,037	2,280,604	527.8	609.6(598.4-620.7)
2016	12,008	2,308,057	520.3	585.9(575.2-596.6)
2017	12,640	2,339,450	540.3	596.7(586.1-607.3)
2018	12,705	2,364,753	537.3	585.0(574.7-595.3)
2019	12,448	2,373,882	524.4	560.0(550.0-569.9)

Source: CDC Wonders. Age-adjusted to the 2000 standard population. Approved for public distribution. 2021-07-28

Overall Mortality by Race/Ethnicity

Mortality rate differs by racial/ethnic group in Harris County during 2015-2019. African Americans/Blacks have the highest mortality rate at 936.1 per 100,000 persons, followed by Whites and Hispanics. Asian/Pacific Islanders have the lowest mortality rate.

Age-Adjusted Mortality Rates by Race/Ethnicity, Harris County 2015-2019



Child Mortality (1-17)

The following mortality analysis includes children 1-17. Causes of death for infants are different than leading causes of death for children 1-17.

Child Mortality by Gender (1-17)

1,233 children ages 1-17 years died during 2015-2019 in Harris County. The crude mortality rate varies from 20.7-21.9 per 100,000 persons in these five years. Males had a higher mortality rate than females in all years.

Crude All-Cause Mortality Rates for Children 1-17, Harris County 2015-2019

Year	Total death	Population	Crude death rate Per 100,000 persons 95% Confidence Interval
All			
2015	253	1,153,522	21.9 (19.2-24.6)
2016	242	1,165,508	20.8 (18.1-23.4)
2017	244	1,176,272	20.7 (18.1-23.3)
2018	250	1,181,512	21.2 (18.5-23.8)
2019	244	1,178,728	20.7 (18.1-23.3)

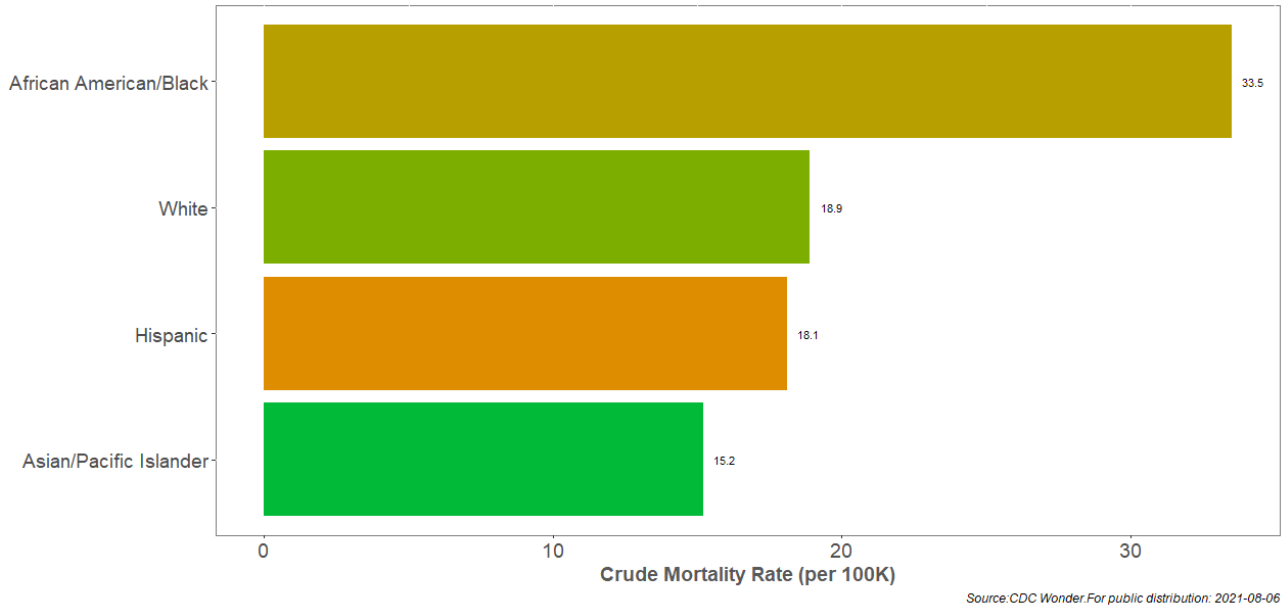
Crude Mortality Rate Children 1-17 Years by Gender, Harris County 2015-2019

Year	Total death	Population	Crude death rate Per 100,000 persons 95% Confidence Interval
Male			
2015	165	587,522	28.1 (23.8-32.4)
2016	143	593,077	24.1 (20.2-28.1)
2017	156	599,170	26.0 (22.0-30.1)
2018	152	601,453	25.3 (21.3-29.3)
2019	145	599,642	24.2 (20.2-28.1)
Female			
2015	88	566,000	15.5 (12.5-19.2)
2016	99	572,431	17.3 (14.1-21.1)
2017	88	577,102	15.2 (12.2-18.8)
2018	98	580,059	16.9 (13.7-20.6)
2019	99	579,086	17.1 (13.9-20.8)

Child Mortality by Race/Ethnicity (1-17)

African American/Black children ages 1-17 had a higher all-cause mortality rate in both males and females. Asian children had the lowest mortality rate.

Crude Mortality Rate Children 1-17 Years by Race/Ethnicity, Harris County 2015-2019



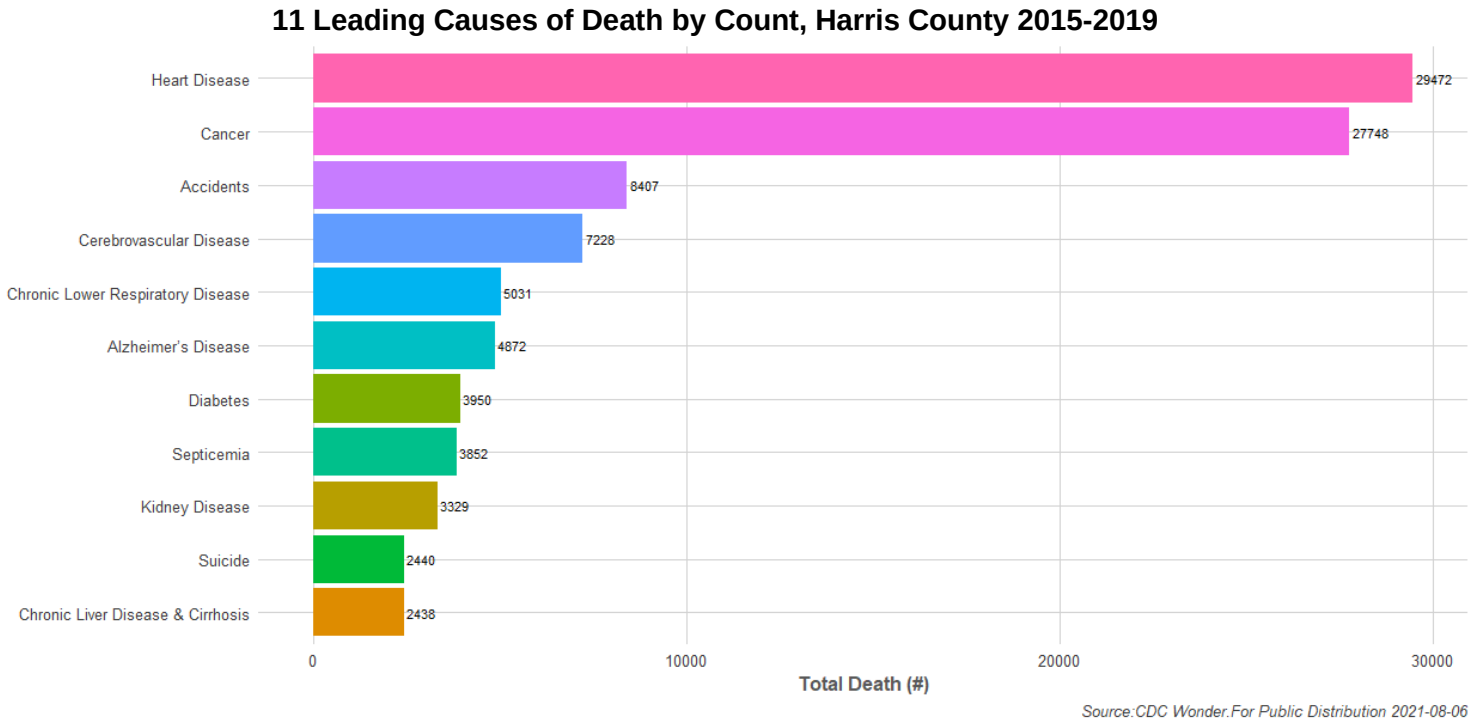
Leading Causes of Death

Overall

From 2015-2019, there were 132,177 deaths with varied underlying causes that ranged across 3,322 unique codes within the 10th version of the International Classification of Diseases (ICD-10) codes. The figure below shows the 11 leading causes of death by count during these five years. The 11 leading causes account for 74.0% of total death from 2015-2019. The four top leading causes of death have remained the same since 2015, with the other seven leading causes change slightly in rank from 2015-2019. The leading three causes of death account for 50% of all deaths during these five years.

Causes of death are categorized by CDC Wonder based on ICD-10 codes from death certificates. Data on leading causes of death in 2020 are provisional, but COVID-19 was the third leading cause of death.

Chronic diseases continue to be the major cause of death in Harris County. Heart disease and cancers accounted for 43.2% of all deaths in 2015-2019. The 11th leading cause of death in 2019, chronic liver disease and cirrhosis, is included because from 2016-2018 and in 2020 it was the 10th leading cause of death.



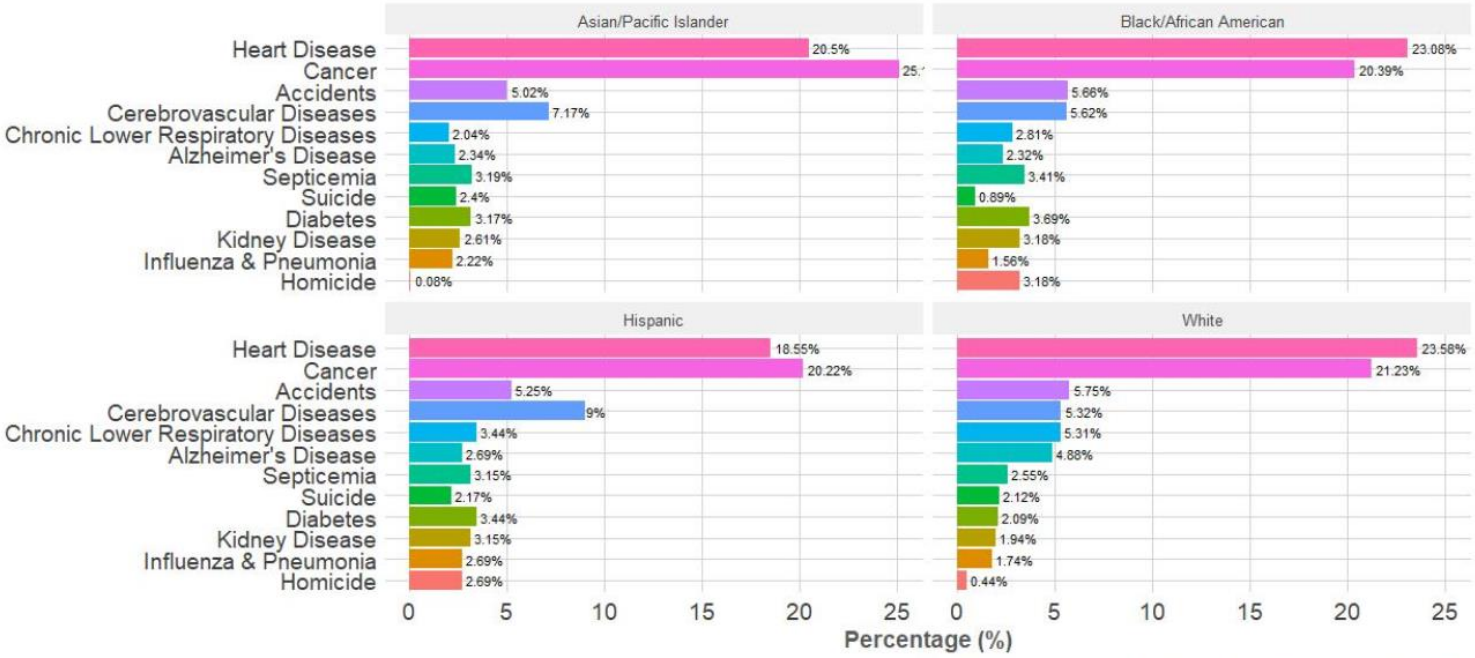
Leading Causes of Death by Race/Ethnicity

The graph below shows the leading causes of deaths for each race/ethnicity from 2015-2019. Among White and African American/Blacks populations, the leading cause of death is heart disease. Among Hispanic and Asian populations, the leading cause of death is cancer.

Homicide is the 8th, and 10th leading cause of death for African Americans/Blacks and Hispanics in Harris County respectively, but is not within the 11 leading causes of death for Whites and Asian. Additionally, suicide is the 8th and 11th leading cause of death for Whites and Asian, respectively, but is not in the 11 leading causes of death for African Americans and Hispanics.

African Americans/Blacks have the highest mortality rates of heart disease, cancer, accidents, and cerebrovascular diseases. Whites have the highest mortality rate of Alzheimer's disease and chronic lower respiratory disease.

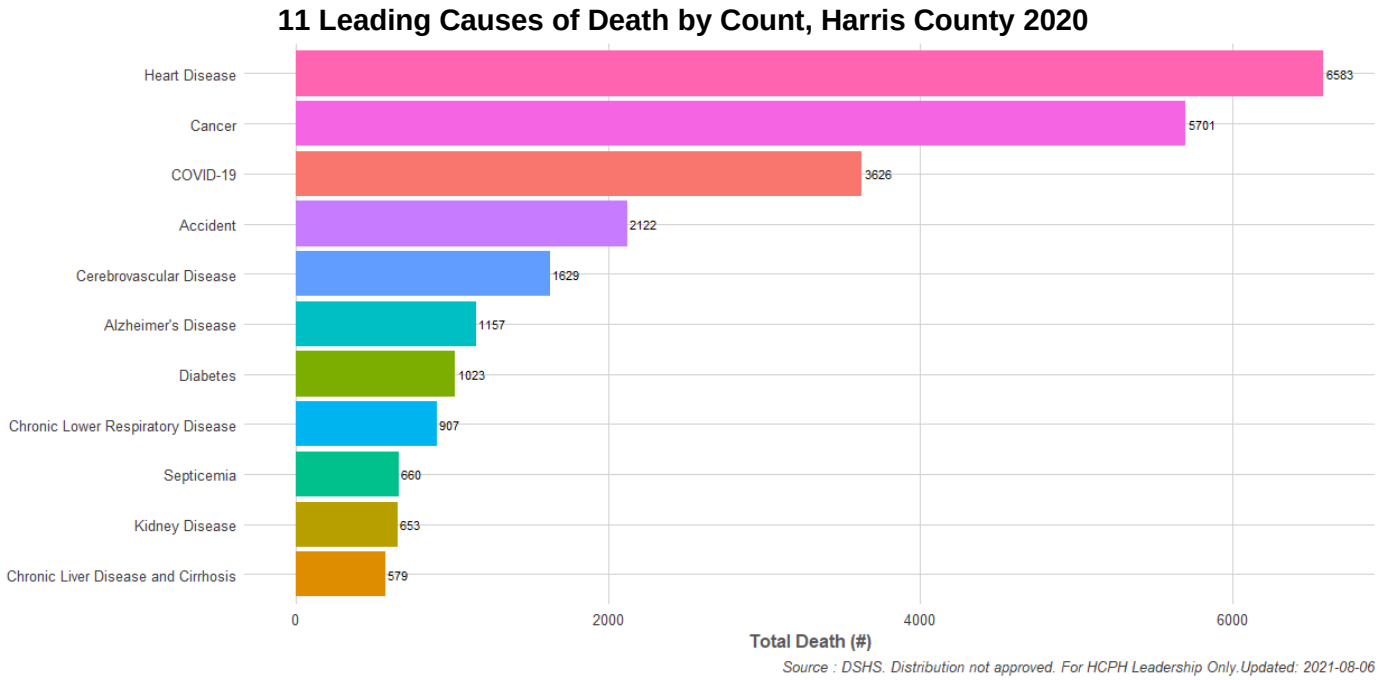
11 Leading Causes of Death by Race/Ethnicity, Harris County 2015-2019



Source:CDC Wonder.For public distribution: 2021-08-06

Leading Causes of Death in 2020

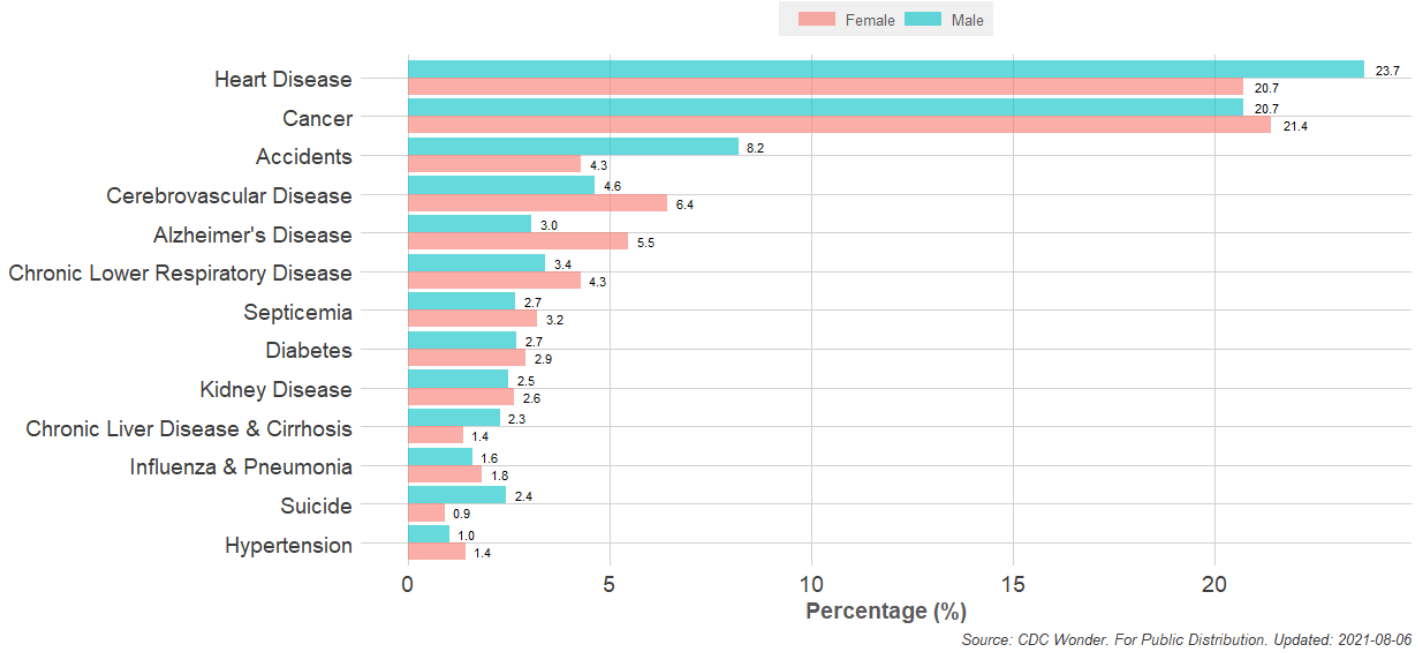
There were 32,741 total deaths in 2020. In 2020, COVID-19 was the third leading cause of death and chronic liver disease was the 10th leading cause of death in Harris County. Other leading causes staying consistent.



Leading Causes of Death by Gender

Males have the same top 11 leading causes of death as the entire Harris County population, with the leading cause of death being heart disease. For women, the leading cause of death is cancer. Men are more likely to die of heart disease, accidents, and suicide than females. Females are more like to die of Alzheimer's disease.

11 Leading Causes of Death by Gender, Harris County 2015-2019

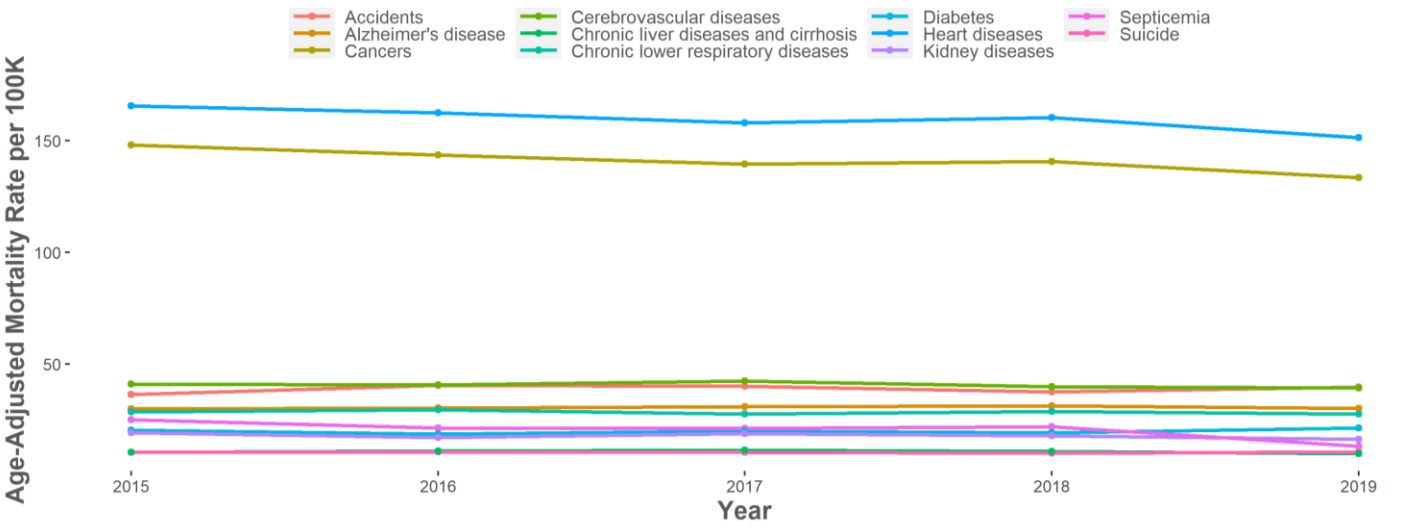


Source: CDC Wonder. For Public Distribution. Updated: 2021-08-06

Trends with Leading Causes of Death

The graph below shows trends in the leading causes of death over time. During 2015-2019, the mortality rates of heart disease and cancer decreased.

Mortality Trend of 11 Leading Causes of Death, Harris County 2015-2019

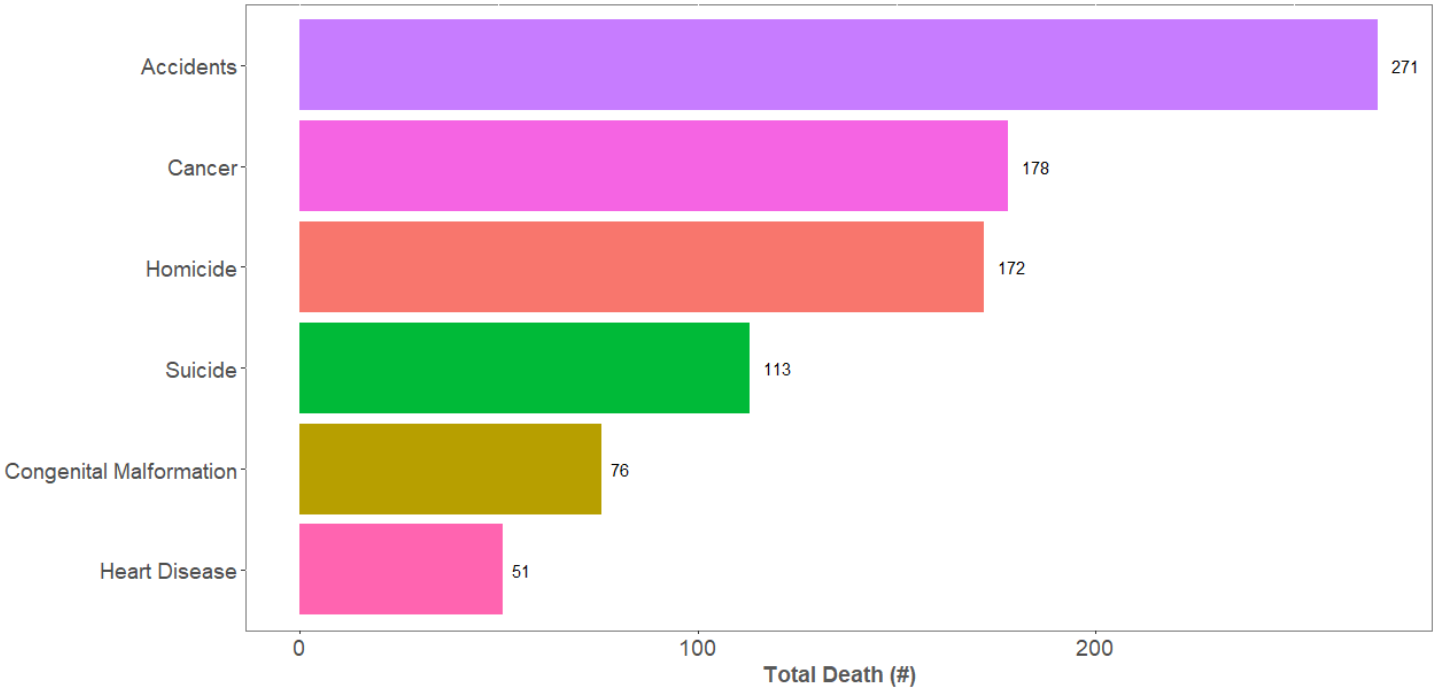


HCPH Data. Distribution not approved. For HCPH Leadership Only. Updated: 2021-07-28

Leading Causes of Death of Children

For children aged 1-17, accidents, cancer, homicide, and suicide are the four leading causes of death. These causes account for 59.5% of deaths in children. These causes align with the four leading causes of death for children in Texas and in the nation. However, the mortality rates for cancer and homicide are higher, and mortality rates of accidents and suicides are lower in Harris County compared to the U.S. and Texas. In 2019, homicide surpassed cancer as the second leading cause of death for children.

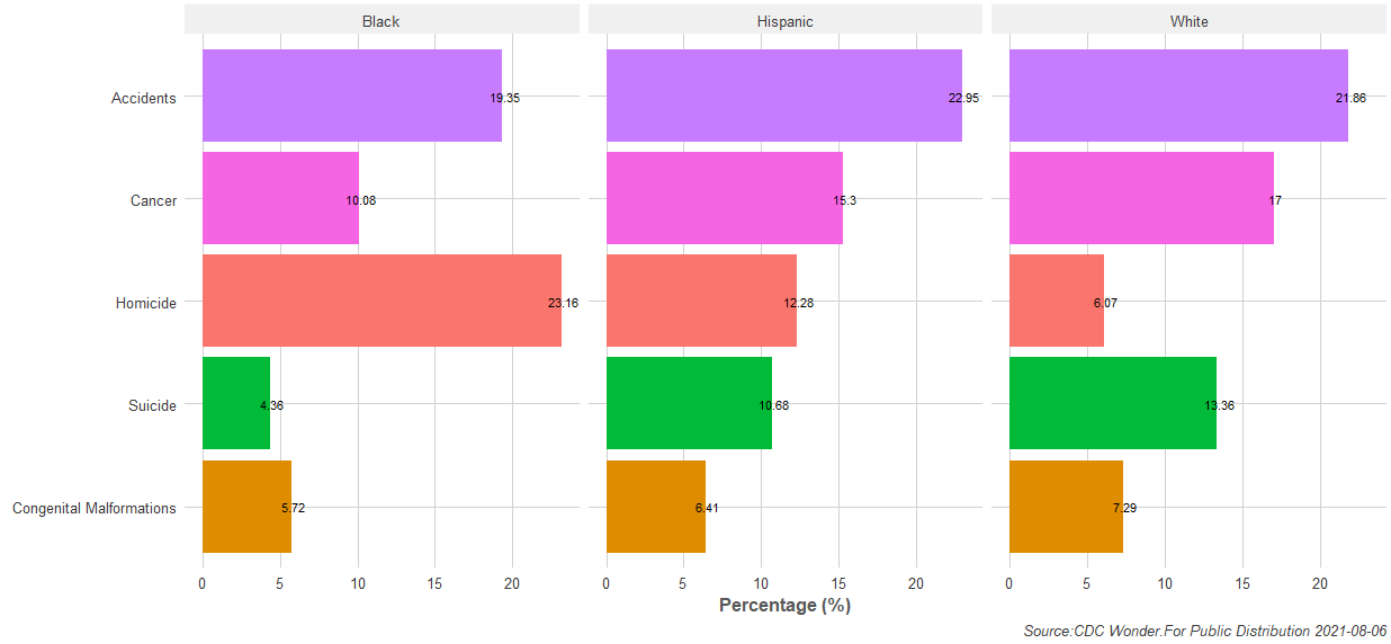
Six Leading Causes of Death of Children 1-17, Harris County 2015-2019



Source: CDC Wonder. For Public Distribution. Updated: 2021-08-06

The figures below show the cause of death of children by race/ethnicity and by gender from 2015-2019. Homicide-related deaths occurred more often in African American/Black children and suicide-related death occurred more often in White Children.

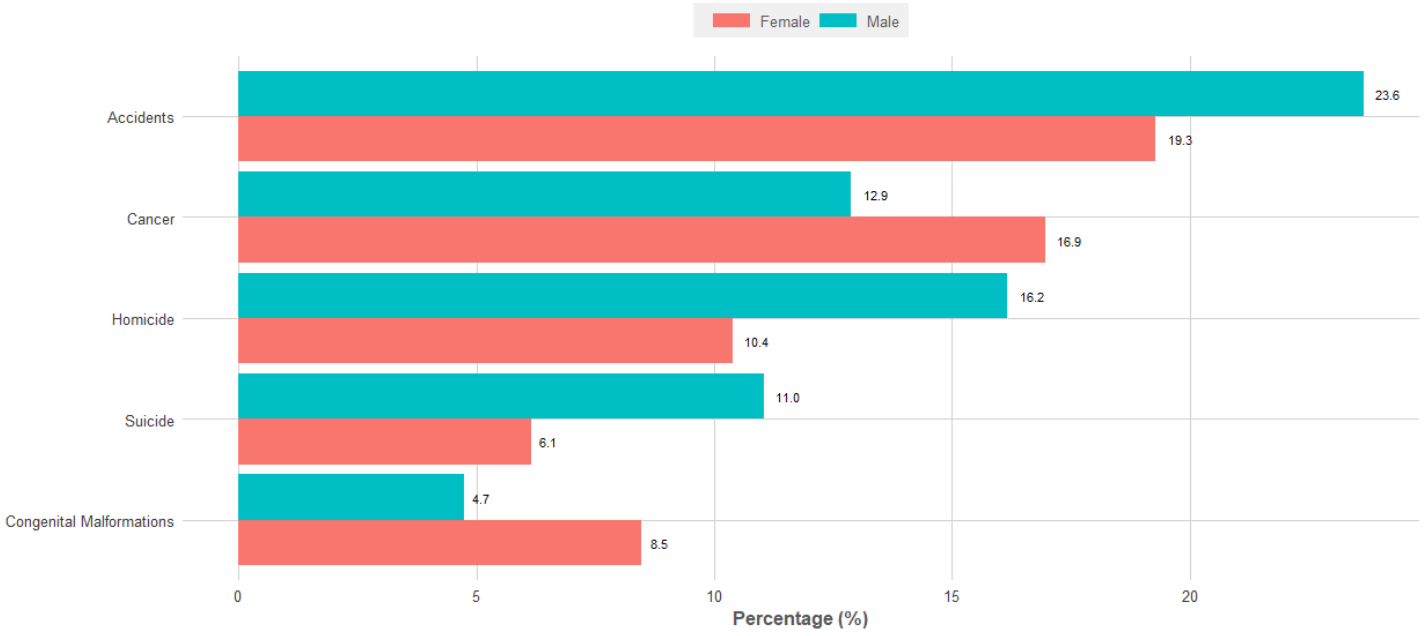
Five Leading Causes of Death of Children by Race/Ethnicity in Harris County 2015-2019



Source:CDC Wonder.For Public Distribution 2021-08-06

The figure below shows the cause of death in male and female children from 2015-2019. Accident, suicide, and homicide account for higher proportion of death in male children than in female children. Cancer account for higher proportion of death of female children than in male children.

Five Leading Causes of Death in Children 1-17 by Gender, Harris County 2015-2019



Source:CDC Wonder.For Public Distribution 2021-08-06

Select Cause of Death Analyses

Heart Disease and Hypertension

The mortality rate of heart disease has decreased over the last ten years, particularly for ischemic heart diseases, including acute myocardial infarction.

Although heart disease mortality is decreasing, the mortality rate of all hypertension-related diseases (essential hypertension and hypertensive renal disease, hypertensive heart, and renal disease) is largely stable after an increasing trend since 2011. Although the African American/Black population has the highest mortality rate of hypertension-related disease, the rate has decreased since 2017 significantly. White and Asian populations have a lower mortality due to hypertension-related complications, but rates have been increasing.

Cancer

From 2015-2019, cancer accounted for 20.4%-21.4% of total deaths in Harris County. Cancers of the lung (20.1%), colon-rectum (8.5%), pancreas (7.0%), and liver (5.0%) were the most common causes of cancer-related death in the entire population. Breast cancer accounts for 8.34% cancer-related death in women and prostate cancer accounts for 4.93% cancer-related death in men. For cancer deaths in children, leukemia and brain cancer were the major causes.

The age-adjusted mortality rate of lung cancer has declined from 2015 to 2019. Additionally, the mortality of breast, colon-rectum, and pancreas remained stable or declined slightly during this period. However, the mortality rate of liver cancer increased slightly since 2016, similar to trends across the nation. Chronic liver disease and cirrhosis are risk factors for liver cancer and were the 10th leading cause of mortality in 2016-2018.

African American/Blacks have the highest mortality rate for cancer during 2015-2019, followed by whites and Hispanics. Asian/Pacific islanders have the lowest mortality rate of cancer.

Accidents

Accidents include transport related accidents, non-transport related accidents (falls, unintentional poisoning, drug overdoses, etc.).

Transport accident deaths have declined since peaking in 2016. However, the age-adjusted mortality rate of transport and non-transport accidents increases as people get older. Men were more than twice as likely to die in transport-related accidents than women in all age groups. African American/Blacks have the highest rates of transport accident-related deaths.

The mortality rate of non-transport accidents triples in people 75 years or old compared to people 45-54 years old. For non-transport accidents with people over 75, 75% of the non-transport accidents are falls. The mortality rates due to falls have been stable from 2015-2019. Non-transport related deaths do not demonstrate marked racial or ethnic disparities.

The mortality rate of accidental poisoning and unintentional drug overdose has increased steadily since 2015. Accidental poisoning, including drug overdose, is higher in men than in women and increases with age. The most common drugs found in overdose deaths were opioids, cocaine, amphetamines, or a combination of substances. The use of amphetamine, cocaine and opioid by count has increased steadily since 2010. Whites have higher age-adjusted mortality rate of accidental poisoning than other races. Poisoning is rarely the cause of death for Asians. An increasing trend of accidental poisoning-related death rate is noticed between 2015 and 2019.

Neurodegenerative Diseases (Alzheimer's Disease and Parkinson's Disease)

Neurodegenerative diseases (Alzheimer's disease and Parkinson's disease) caused 4.6% of all deaths in Harris County in 2015-2019. More than 90% of mortality due to Alzheimer's disease occurred in those 75 years or older. There was a significant increase of the age-adjusted mortality rate of neurodegenerative disease between 2013-2015, but the rate has been stable since 2015.

Whites have the highest mortality rate of neurodegenerative disease, followed by African American/Blacks and Hispanics.

Other Death Trends

While the mortality rate of many diseases remained stable in the past decade, some trends are worth mentioning. The mortality rate of HIV has decreased continuously. Nutritional deficiency-related deaths doubled in 2019 compared to 2015.

Significant racial disparity is observed for homicide and suicide. The mortality rate of homicide fluctuated through the years but took an upward turn in 2019. During 2015-2019, homicide was the 8th leading cause of death in African American/Blacks and suicide was the 8th leading cause of death in Whites. In fact, African American/Blacks account for half of the deaths due to homicide, whereas Whites account for 58% of the deaths due to suicide.

Technical Notes

Data in this report are based on the Underlying Causes of Death data from CDC wonder and Texas Department of Health Services. WONDER provides county-level mortality and population data from 1999-2019. WONDER is based on data from all death certificates filled in the 50 states that are processed by the National Center for Health Statistics (NCHS). A single underlying cause of death and demographic data was obtained from each death certificate. Causes-of-death statistics presented in the report are classified according to the International Classification of Diseases 10th version (ICD10).

Note: Deaths in demographic groups with smaller sample sizes are suppressed in the WONDER system. The report of race and ethnicity and sex and gender may be subject to information bias.

Calculation Methods

The data on life expectancy at birth 2018 for Harris County, Texas, and United States were obtained from countyhealthrankings.

Measures of mortality includes the total death count, crude, age-adjusted, and age-specific death rate per 100,000 persons for each year or for all five years.

The populations used to calculate death rate for each year is based on postcensal population of Harris County estimated with the 2010 census, estimated as of July 1 of each year. The estimates were produced under a collaborative arrangement with the U.S. Census Bureau. The bridged population data are used for computing population-based rates by race. The race/ethnicity was grouped as Hispanic, White, African American/Black, and Asian/Pacific Islander. The Hispanic population includes persons of any race. Death rate are flagged as Unreliable when the rate is calculated with a number ≤ 20. We used zero to mark the death rate in this scenario.

Crude death rate: calculated for all-cause and each cause, or each subgroup, using the count of death divided by the population that is relevant. When comparing the mortality rate of the age-specific group (such as for 10-year group), the crude death rate was used for comparison. We calculated the crude mortality rate for children aged 1-17 years.

Age-adjusted death rate: standardized to 2000 U.S. Standard Population using the direct method applying the same age grouping and proportions as established by the National Center for Health Statistics of the Department of Health and Human Services (DHHS). Age-adjusted death rates are better indicators than crude death rate for examining the changes in the risk of death over 2015-2019 when Harris County's population structure may have changed. In the other word, the age-adjusted rate is a better indicator of relative risk when comparing the mortality cross five years and between gender and racial groups that may have different age distribution. Age-adjusted rates are the relative indexes.

Rates were considered statistically different if their confidence intervals did not overlap. Confidence intervals and margins of error were 95% unless otherwise specified.

Cause of Death	ICD-10
Accident	V01-X59, Y85-Y86
Transport accident	V01-V99, Y85
Motor vehicle accidents	
Non-transport accident	W00-X59, Y86
Accidental poisoning and exposure to noxious substances	X40-X49
Accidental drowning and submersion	W65-W74
Fall	W00-W19
Unintentional drug overdose	X40-X44
Alzheimer's disease	G30
Assault (Homicide)	X85-Y09, Y87.1
Cerebrovascular diseases (Stroke)	I60-I69
Chronic liver disease and cirrhosis	K70, K73-K74
Chronic lower respiratory diseases	J40-J47
Diabetes mellitus (Diabetes)	E10-E14
Diseases of heart (Heart disease)	I00-I09, I11, I13, I20-I51
Essential hypertension and hypertensive renal disease (hypertensive renal disease)	I10, I12, I15
Human immunodeficiency virus (HIV) disease	B20-B24
Hypertensive heart disease and renal disease	I13
Hypertension-related death	I10, I11, I12, I13, I15
Influenza and pneumonia	J09-J18
Intentional self-harm (Suicide)	X60-X84, Y87.0
Ischemic heart disease	I20-I25
Malignant neoplasms (Cancer)	C00-C97
Malignant neoplasms of liver and intrahepatic bile ducts	C22
Malignant neoplasms of trachea, bronchus and lung	C33-C34
Malignant neoplasm of breast	C50
Malignant neoplasm of prostate	C61
Malignant neoplasm of pancreas	C25
Malignant neoplasms of colon, rectum and anus	C18-C21
Nephritis, nephrotic syndrome and nephrosis (Kidney Disease)	N00-N07, N17-N19, N25-N27
Nutritional deficiency	E40-E64
Parkinson's disease	G20-G21
Septicemia	A40-A41

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Atlanta: American Cancer Society 2021.

Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2019 on CDC WONDER Online Database, released in 2020. Data are from the Multiple Cause of Death Files, 1999-2019, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program.

Kochanek KD, Murphy SL, Xu JQ, Arias E. Deaths: Final data for 2017. National Vital Statistics Reports; vol 68 no 9. Hyattsville, MD: National Center for Health Statistics. 2019.

Sandi L. Pruitt PhD, Eileen Nehme PhD, Molly O'Neil MS, Dan Oppenheimer MFA, Daniel F. Heitjan PhD, Zhiyun Ge PhD, Amy E. Hughes PhD, Danyi Xiong MA, Nagla Elerian MS, and David Lakey MD of University of Texas Southwestern Medical Center, Department of Population and Data Sciences (SLP, DFH, ZG, AEH), The University of Texas Health Science Center at Tyler/University of Texas System Population Health (EN, MO, DO, NE, DL), and Southern Methodist University Department of Statistical Sciences (DH, ZG, DX).